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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/197,534	11/23/98	YAMAZAKI S	0756-1894

EXAMINER	
COLEMAN, W	
ART UNIT	**PAPER NUMBER**
2823	

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MM91/1009

DATE MAILED: 10/09/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Applicati n No.	Applicant(s)	
	09/197,534	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	W. David Coleman	2823	

-- The MAILING DATE of this communication appears on th cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *08/709,108* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6-10* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mei et al., U.S. Patent 5,366,926 in view of Soh, U.S. Patent 5,347,146.

2. Pertaining to claims 1, 4, 5, 8, 9, 12, 13 and 16, Mei discloses a semiconductor process substantially as claimed. See **FIGS. 1, 3 & 4**, where Mei teaches a method of manufacturing a semiconductor device comprising the steps of:

preparing a plurality of semiconductor islands **32** as seen in **FIG. 4** over a substrate **14**;

directing a pulsed excimer beam **22** (see **FIG. 3**) having a cross section elongated in one direction to the substrate (function of the homogenizer 24);

moving the substrate **14** in a direction perpendicular to the elongation direction of the pulsed excimer laser beam, thereby irradiating **25** semiconductor islands (structures) with pulsed excimer laser beam 22.

However, Mei fails to teach the process of using a glass substrate and ion doping. Soh teaches the use of glass substrates. See **FIG. 3** of Soh, where Soh teaches the use of glass substrate **31** and ion doping (column 4, lines 62-68) i.e., the formation of the active semiconductor layer **35** may be achieved by depositing an amorphous layer and then heat treating the amorphous layer using laser beam.

In view of Soh, it would have been obvious to one of ordinary skill in the art to recognize that ion doping can be substituted for implantation in the formation of the active layer of semiconductor devices.

3. Pertaining to claims 3, 7 and 9, Mei discloses a semiconductor process substantially as claimed. See FIGS. 1, 3 & 4, where Mei teaches a method of manufacturing a semiconductor device comprising the steps of:

preparing a plurality of semiconductor islands **32** as seen in **FIG. 4** over a substrate **14**;

directing a pulsed excimer beam **22** (see **FIG. 3**) having a cross section elongated in one direction to the substrate (function of the homogenizer 24);

moving the substrate **14** in a direction perpendicular to the elongation direction of the pulsed excimer laser beam, thereby irradiating **25** semiconductor islands (structures) with pulsed excimer laser beam 22.

However, Mei fails to teach the process of using a glass substrate and ion doping. Soh teaches the use of glass substrates. See **FIG. 3** of Soh, where Soh teaches the use of glass substrate **31** and ion doping (column 4, lines 62-68) i.e., the formation of the active semiconductor layer **35** may be achieved by depositing an amorphous layer and then heat treating the amorphous layer using laser beam.

In view of Soh, it would have been obvious to one of ordinary skill in the art to recognize that ion doping can be substituted for implantation in the formation of the active layer of semiconductor devices. Since Soh forms a CMOS device it would be obvious that both first impurity and second impurity will result in the formation of a complimentary semiconductor device.

4. Pertaining to claims 2, 6, 10 and 14, Mei discloses a method wherein the energy density of the pulsed excimer layer beam I not higher than 300 mJ/cm2 (column 4, lines 47-57).

5. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mei et al., U.S. Patent 5,366,926 in view of Soh, U.S. Patent 5,347,146 as applied to claims 1-16 above, and further in view of Czubatyj et al., U.S. Patent 5,180,690.

6. Pertaining to claims 17 and 19, Mei in view of Soh discloses a semiconductor process substantially as claimed. See **FIGS. 1, 3 & 4**, where Mei teaches a method of manufacturing a semiconductor device comprising the steps of:

preparing a plurality of semiconductor islands **32** as seen in **FIG. 4** over a substrate **14**;

directing a pulsed excimer beam **22** (see **FIG. 3**) having a cross section elongated in one direction to the substrate (function of the homogenizer 24);

moving the substrate **14** in a direction perpendicular to the elongation direction of the pulsed excimer laser beam, thereby irradiating **25** semiconductor islands (structures) with pulsed excimer laser beam 22.

However, Mei fails to teach the process of using a glass substrate and ion doping. Soh teaches the use of glass substrates. See **FIG. 3** of Soh, where Soh teaches the use of glass substrate **31** and ion doping (column 4, lines 62-68) i.e., the formation of the active semiconductor layer **35** may be achieved by depositing an amorphous layer and then heat treating the amorphous layer using laser beam.

In view of Soh, it would have been obvious to one of ordinary skill in the art to recognize that ion doping can be substituted for implantation in the formation of the active layer of semiconductor devices.

The combined teachings fail to disclose a silicon-germanium alloy for the fabrication of a semiconductor device. Czubatyj teaches the formation of silicon-germanium semiconductor

devices (column 3, lines 49-55) where Czubatyj teaches the use of semiconductor alloys. In view of Czubatyj it would have been obvious to incorporate a silicon-germanium alloy into the combined teachings of Mei and Soh because one of ordinary skill in the art to recognize that silicon-germanium alloy has higher mobility, which enhances the performance of thin-film-transistors (TFT's).

7. Pertaining to claims 18 Mei fails to teach the use of boron and phosphorus being selectively introduced into the plurality of semiconductor islands. Soh teaches the use of n-type and p-type materials in the formation of CMOS devices. In view of Soh, it would have been obvious to one of ordinary skill in the art to recognize that both phosphorus and boron are n-type and p-type impurities form the formation of semiconductor devices.

8. Pertaining to claim 20, Mei teaches the use of irradiating the semiconductor islands (structures) with plural pulses of pulsed excimer laser beam (column 4, lines 7-8, where Mei talks about pulses).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 703-305-0004. The examiner can normally be reached on 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

WDC
September 27, 2001

LONG PHAM
PRIMARY EXAMINER